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# The construction of a test to measure the associational reading ability of the intermediate grades.

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Thesis

# THE CONSTRUCTION OF A TEST TO MEASURE THE ASSOCIATIONAL READING ABILITY OF THE INTERMEDIATE GRADES

Submitted by

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(B.S. in Ed., Bridgewater Teachers College, 1942)

In partial fulfillment of requirements for
the degree of Master of Education

1947

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# CHAPTER I

# STATEMENT OF PROBLEM AND DEFINITION OF TERMS USED

# CHAPTER I

## STATEMENT OF PROBLEM AND DEFINITION OF TERMS USED

Statement of problem: The purpose of this study is to develop an intermediate grade test to measure the number of pertinent associations made while reading. It is hoped through this test to ascertain:

1. Whether there is a difference in this ability between the grades
2. The extent to which intelligence influences the results
3. Sex differences

## DEFINITION OF TERMS USED

Associative reading: The use of the term assoiative or associational reading, throughout this thesis, means the ability of a person to adjust and apply experiential ideas, so that he can (1) find topics for further study and (2) suggest various activities allied to the stimulus situations that arise on the printed page.

Experiential ideas: This whole study presupposes a certain number of experiences, either vicarious or first-hand, having occurred to the child during his life time. The vicarious experiences may have been through previous readings, conversations, movies, radio programs, or plays.

Intermediate grades: The grades with which this is concerned are the fourth, fifth, and sixth of an average community.

# CHAPTER II

# REVIEW OF PREVIOUS RESEARCH

## CHAPTER II

## REVIEW OF RESEARCH

Before attempting this study it was necessary to (1) place the importance of association thinking in its relation to the reading process, (2) find out if there were any directly related studies, (3) examine any studies which might in some manner parallel the one proposed, and (4) determine from previous writings the need for such a study as the one considered.

Associational thinking and its relation to reading: Reading has been established not as a unitary process but a number of activities highly integrated.[1] In the light of this statement and for a clearer understanding of the study, it is necessary to establish the relationship of reading to the phase of the higher mental processes which shall be referred to as associational thinking.[2] Thorndike has suggested the following as divisions of the higher mental processes:- selective and relational thinking, generalization and organization. It is relational thinking and its importance to reading that will be considered.[3] Guthrie suggests the importance of the associative process when he states,

---

[1] Arthur I. Gates, "A Study of the Role of Visual Perception, Intelligence, and Certain Associative Processes in Reading and Spelling," Journal of Educational Psychology, 17: 433-445, October 1926

[2] Edward L. Thorndike, The Fundamentals of Learning, New York: Bureau of Publications, Teachers College, Columbia University, 1932

[3] E. R. Guthrie, The Psychology of Learning, New York: Harper Brothers, 1935, p. 23

> Associative learning has been recognized since there has been any writing on the subject of human nature.

Leary[1] attempts to analyze reading when she says,

> Reading is a complex mental activity, one that involves recognizing visual symbols; associating them with sound symbols; translating these sound symbols into words, words into phrases, sentences, and sustained thought patterns; reflecting on their meaning; relating them to concepts and experiences acquired earlier; applying what is read to one's modes of thinking and acting, and, moreover, doing all these things more or less simultaneously, with smooth, even rhythmical rapidity.

Russell[2] also observes,

> The reading act is composed of mechanics, understanding, and enjoyment, and also thinking and doing. It involves relating what one reads to previous experiences and evaluating this material critically.

Gibbons[3] says that,

> Reading may be described as a mental process in which the mind is actively engaged in two types of activities, (1) in recalling those meanings of words, phrases, and even sentences which the reader already possesses, and (2) in using these meanings to construct new meanings on the page. The most important part of the reading process, however, is the construction of new meanings. It is this aspect of reading that makes it an enjoyable activity, and in reality, gives the chief purpose for reading at all.

---

1 Bernice Leary, "Recent Trends in Reading," Conference on Reading, Volume I, Chicago: University of Chicago Press, 1929, p. 29

2 David H. Russell, "Reading for Critical Thinking," California Journal of Elementary Education, 14: 79-86, November, 1941, p. 83

3 Helen D. Gibbons, "The Meaning Side of Reading," California Journal of Elementary Education, 9: 224-228, May, 1941, p. 226

Traxler[1] believes that the association of ideas has another bearing on reading and states,

> Another factor which some psychologists believe to be a cause of differences in reading rate is speed of association of ideas. It has been observed in a general way that slow thinkers tend to be slow readers even when their general ability, the mechanical features of their reading, and the conditions under which they read are satisfactory. There is, however, little objective evidence on the relation of rate of the association of ideas and rate of reading.

The process of association of ideas is important in other phases of Life. Durrell[2] says,

> It is also considered evidence of good thinking if while reading or listening, a person demonstrates any of the following associational abilities: finds examples and applications of the point being considered; suggests plans or activities allied to the topics; suggests additional pertinent topics for study or consideration; shows relationships to other fields; creates or invents new combinations of ideas.

Gray[3] also points to the importance of the associative process when, in referring to information gained from reading, he says that,

> It should be associated with previous experience and reorganized into useful patterns of thought and action. This result can be achieved only through active processes of association, synthesis, and judgment directed to particular ends.

---

[1] Arthur E. Traxler, "The Relation Between Rate of Reading and Speed of Association," Journal of Educational Psychology, 25: 357-365, May, 1934, p. 358

[2] Donald D. Durrell, "Language and the Higher Mental Processes," Review of Educational Research, 13: 110-114, April, 1943, p. 111

[3] William S. Gray, "Recent Trends in Reading," Conference on Reading, Volume I, Chicago: University of Chicago Press, 1939, pp. 4-5

Strang[1] elaborates slightly on this idea when she states,

> What a reader gets out of a passage depends in a large measure on what he brings to the passage.

From the foregoing statements it was concluded that the associative process was very important in order to carry on a program in reading which would be most beneficial.

Study directly related: In examining the literature there was only one study that could be considered directly related to that proposed. Marden[2] conducted an experiment in the social studies with seventh-grade children to determine to what extent they were able to apply experiential ideas in finding: topics for further study, activities to be engaged in, illustrations to a specific problem, and illustrations to a generalization; and how these responded to teaching. Her results show that the pupils made statistically significant gains in their ability to suggest activities and raise questions related to reading. The ability to illustrate a generalization and a specific problem showed no statistically significant gains after a period of teaching. In all phases there was a slight correlation between number of responses and intelligence, but no sex differences were noted.

---

[1] Ruth Strang, Exploration of Reading Patterns, Chicago: University of Chicago Press, 1942, p. 4

[2] Avis Marden, Associational Reading Abilities of the Seventh Grader, Unpublished Master's Thesis, Boston University, 1941

Studies in allied fields: Since there was only one directly related investigation, it was necessary to turn to studies in closely related fields. These were considered in the free association of words in relation to reading and in critical and organizational thinking.

Wheat[1] and Traxler[2] found a low but positive correlation between free-association tests and intelligence.

Traxler,[3] however, did find a significant relation between speed of free-association and rate of reading. Tinker[4] discovered that there was a slight but significant correlation between speed of association and vocabulary knowledge. Those with higher vocabulary scores tended to have faster associations.

The field of investigation in critical thinking while reading seems to be in the fore in recent years. The studies

---

1 Leonard B. Wheat, Free Associations to Common Words, New York: Bureau of Publications, Teachers College, Columbia University, 1931

2 op. cit.

3 Ibid.

4 Miles A. Tinker, Florence Hackner, and Marion Wesley, "Speed and Quality of Association as a Measure of Vocabulary Knowledge," Journal of Educational Psychology, 31: 575-582, November, 1940

of Gans[1] and Glaser[2] both indicate that critical thinking has not been fully developed in schools and that definite teaching proceedings can improve this ability so that the results are statistically significant. Clark[3], Raths[4], and Grener[5] have also constructed tests involving the process of critical thinking. The study conducted by Clark[6] was found to be most helpful in the examination of data.

Salisbury[7] in her study on organizational thinking found that teaching of outlining as a skill produces a statistically significant gain in reading ability and reasoning. There was also a measurable transfer into the subjects of history, civics, and science.

---

1 Roma Gans, A Study of Critical Reading Comprehension in the Intermediate Grades, New York: Bureau of Publications, Teachers College, Columbia University, 1940

2 Edward Glaser, An Experiment in the Development of Critical Thinking, New York: Bureau of Publications, Teachers College, Columbia University, 1941

3 Leslie Stearns Clark, The Construction of a Test of Scientific Thinking for Grades Five and Six, Unpublished Master's Thesis, Boston University, 1946

4 Louis Raths, "A Thinking Test," Educational Research Bulletin, 23: 72-75, March, 1944

5 Norma Grener and Louis Raths, "Thinking in Grade Three," Educational Research Bulletin, 24; 38-42, February, 1945

6 Ibid.

7 Rachel Salisbury, "A Study of the Transfer Effects of Training in Logical Organization," Journal of Educational Research, 28, 241-254, December, 1934

Dickinson[1] in his study on generalizing ability found that children are able to generalize better when they are able to remember past experiences.

Statements on need for a study on associational reading: In examining the writings in the field of reading there were many statements that pointed to the need of more studies in the field of associational reading ability. Strang[2] says,

> Beginning with the first grade the simpler forms of the more difficult techniques such as appreciation, organization of thought, application of idea, and other so called higher types of reading ability should be developed on the young child's level of comprehension and interest.

Patterson[3] believes that,

> Grade by grade, in some degree, reading should be ordered so that it encourages the creative side of the pupil's intellectual life.

Center[4] also proposes that,

> Reading must be taught as an active process of thinking.

In Stone's[5] objectives for study reading he lists a habit of thoughtful questioning and problem raising while reading.

---

[1] A. E. Dickinson and F. T. Tyler, "An Experimental Study of the Generalizing Ability of Grade II Pupils, "Journal of Educational Psychology, 35: 432-441, October, 1944

[2] Ruth Strang and Florence Rose, Problems in the Improvement of Reading in High-School and College, Lancaster, Pennsylvania: Science Press Printing Company, 1938, pp. 38-39

[3] Samuel W. Patterson, Teaching the Child to Read, New York: Doubleday, Doran and Company Inc., 1930, p. 80

[4] Stella Center and Gladys Persons, Teaching High-School Students to Read, New York: D. Appleton-Century Company,

[5] Clarence Stone, Better Advanced Reading, St. Louis: Webster Publishing Company, 1937

Nemec[1] urges teachers,

> To develop a realization that the thought stimulation and thought getting process of reading have direct bearing on the thought giving process involved in oral and written language.

Milligan[2] points out that,

> Education is increasing the ability to meet situations by thoughtful use of experience.

Judd[3] adds to this concept of education by saying,

> The chief function of the educational system is to cultivate to their fullest possible limits the unique human functions of attention, analysis, abstraction, and generalization.

Most people accept these ideas of reading and education but as Christ[4] says,

> Most of us who have tried to teach pupils to think, too often divorce thinking from reality.

Summary: It was found in the foregoing research that there were no tests for measuring the associative reading processes on any elementary grade level; but there was a definite need for a consideration of this phase of thinking. The other phases of the higher mental processes have been more fully explored than

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1 Lois Nemec, "Reading in Relation to Experience and Language," Conference on Reading, Volume VI, Chicago: University of Chicago Press, 1944, p. 169

2 John P. Milligan, "Principles Relating Experience to Education," Elementary School Journal, 45: 153-157, November, 1944, p. 153

3 Charles H. Judd, Educational Psychology, Cambridge: Houghton Mifflin Company, 1939, p. 259

4 Henry I. Christ, "The Thinking Laboratory," High Points, 27: 54-57, November, 1945, p. 54

has the associational thinking process. In the light of the research conducted, it was decided to develop a test to measure the number of pertinent associations made while reading by a child in the intermediate grades. Through this test to determine whether: (1) there is any difference in this ability between the grades, (2) intelligence has an effect on the scores obtained, and (3) sex influences the results obtained.

# CHAPTER III

## PROCEDURE OF THE STUDY

# CHAPTER III

## PROCEDURE OF THE STUDY

In order to construct a test of associational reading ability of the intermediate grades, it was necessary to determine (1) the types of associational reading that were to be included, (2) the type of test to be used, and (3) the items which were to be included.

Determining the types of associational reading to be used: The only study which could be considered directly applicable to this investigation was conducted on the seventh-grade level. This included four phases of the associational process: (1) finding topics for further study, (2) discovering activities which might be carried out, (3) illustrating specific problems, and (4) illustrating generalizations. It was decided to use phases of finding topics for further study and discovering activities, since these showed statistically significant gain when taught.

Type of test to be used: There was the possibility of using an objective type test employing the multiple-choice type item wherein three reactions would be listed, one of which was to be marked by the pupil tested. It was decided, however, that any multiple-choice test provided the student with ideas from which to choose. The task involved in associative reading is for the child to find his own pertinent associations from his own experiences without such prompting. Therefore it was decided that the objective test was more an indication of the critical than the associative process. In

order to make a paper-and-pencil test that would measure an ability as subjective as the process of association of ideas, it was decided that pupils would have to write their own reactions to the stimulus situations of the printed page. In order to obtain the optimum number of responses it was necessary to construct paragraphs that had some definite motivation and high interest level for the intermediate grades.

Construction of the test: The complete test appears in the Appendix. It will be noted that it is divided into two distinct parts:

Part I measures the ability to locate topics for further study.

Part II measures the ability to discover activities which might be carried out.

In developing this test it was important to consider the motivation and topics of interest for the intermediate grades. In order to use materials of interest it was expedient to refer to Mitchell[1] who judged the reading preferences of 210 fifth and sixth graders in her investigation. This study determined that sixty-six percent or more of the children in these grades were interested in reading about airplanes, ships, automobiles, adventure, brave deeds, stones, sports, and camping. It was decided to construct one selection about each of

---

[1] S. Ellen Mitchell, Construction and Evaluation of a Measure of Reading Preferences, Unpublished Master's Thesis, Boston University, 1944

the topics mentioned. Part I included the first four of the previously named items, while Part II utilized the remaining. In order to provide the necessary motivation for these selections it was decided to suggest life situations as introductions to the paragraphs. For example, the following introduces a selection about a ship:

> You have been invited on board a battleship. The paragraph below is all that was sent to you from the ship. As you read, think of all the things you would like to know about the ship.

Paragraphs Used: It was necessary to find the paragraphs that would be centered around the items chosen and would be closely connected to the introductory paragraphs already described. In an examination of many textbooks and readers in these grades, no paragraph was found that could meet the established criteria. Consequently, it was necessary to write original paragraphs.

An introductory exercise necessary: After the introductory and the main-idea paragraph had been written, it was decided that, in order to insure the desired type of response the first test in each part would be set up so that the child would choose pertinent items from a number which were both pertinent and irrelevant to the idea paragraph. On the following pages are examples of the exercises in Parts I and II. Through these introductory items the pupil was made cognizant of the general type of response expected of him.

General organization of the test: Three paragraphs in each part were then arranged one to a page. This was done to

PART I

NAME_____ DATE_____
Last First

SCHOOL_____ GRADE_____ BOY OR GIRL_____

A friend of yours has flown across the United States. What questions would you ask him if he only told you the following about the trip?

The plane took off on a clear cold day from the airport in New York. We ran into a few storms on the way over the mountains, but luckily nothing happened. It seemed that before we knew it we had landed in California and we were at the end of our trip.

Put a check ✓ in the ( ) next to the questions that would be good to ask.

(✓) 1. How long did the trip take?

( ) 2. What kind of a plane was it?

( ) 3. What year were airplanes invented?

( ) 4. How many stops did you make?

( ) 5. Who took the first plane ride?

( ) 6. What did you see from the plane?

( ) 7. When did California become a state?

( ) 8. What happened when the plane was in the storms?

( ) 9. Who else was on the plane?

( ) 10. Who served you your dinner?

( ) 11. Did you eat on the plane?

On the next page you will be asked to write your own questions about the paragraph.

NAME_____

You are going to make a rock collection. As you read the paragraph below think of all the things you could do to make your collection the best one around.

There are many kinds of rocks that you can find near your home. The men who study stones have found out many things about our world. If you look carefully at the rocks around you you will know more about your home.

Put a check in the ( ) next to the things that would help you make a good collection.

( ) 1. Take a trip to the natural history museum.

( ) 2. Go to the zoo.

( ) 3. Write for some free books about rocks.

( ) 4. Talk to the man who has a collection.

( ) 5. Read all about the beginning of the world.

( ) 6. Make a map of the places where the stones were found.

( ) 7. Make a stone fence.

( ) 8. Put the names on all the stones.

( ) 9. Talk to the man who sells sand and gravel.

( ) 10. Invite people to see your collection and make suggestions.

On the next page you will be asked to write in your own ideas about the paragraphs.

avoid confusion of ideas as much as possible, and to allow sufficient room for the pupils' written responses. Part I was a separate unit from Part II.

Testing the usability of the material: In order to discount, in so far as possible, reading difficulty, the test was administered to three children who were of this grade level and were known to have a reading difficulty. At this time the directions of the examiner were also judged for clarity. This was done by instructing the children to ask questions if they did not understand the test in any way. A copy of the final instructions to the examiner appears in the Appendix.

Preliminary try-out: After the test had been organized in its final form, the next step was to see if it was usable on classroom groups. How much time was needed in the administration and when the parts should be given were also points that needed to be clarified before the tests were given to the final population. Therefore, the test was given first to sixty sixth graders in one sitting of approximately an hour and a half duration with a ten-minute break between the two sections for exercise. The test was then given to thirty-seven fifth graders in two sittings of about thirty minutes each with a lapse of three hours between each part of the test. It was found that in both the fifth and sixth grades that between a half and three-quarters of an hour was required for both parts of the test or a total of between an hour and an hour and a half for the complete examination. A cursory examination of

the responses of both groups indicated that there was too much transition between the two parts of the test when they were given in one sitting with a short break. Too often the pupil would continue to seek topics for further study in the part devoted to activities. This was not so prevalent in the case where the test had a longer lapse of time between the parts. As a result of the preliminary test, therefore, it was determined to administer the test in two sittings. There would be no time limit placed on the test since quantity and quality of responses were both desired. The approximate time required by the prelinimary test population was one-half to three-quarters of an hour for each part or a total of about an hour and a half.

Selection of the pupils in the investigation: In the choice of pupils to be used to be tested the following factors were considered: (1) a typical community which was neither overly endowed nor under priveleged, (2) a group of intermediate grade children with a normal range of intelligence, and (3) children from the same school system. Most cordial cooperation was granted by the superintendent and teachers of a Massachusetts town school system, whose children met all the requirements. The group tested numbered 160; however, only 155 pupils appeared in the final study since five had to be eliminated because of incomplete data.

Restricting the variables: To reduce the variables in the testing situation the following factors were made similar:

(1) the same person administered all the tests, (2) the testing period occurred within a two-week period, (3) the order of the test was identical in all grades, (4) all pupils in the grades tested took the test, (5) approximately the same time of the day was used in administering the parts of the tests to all the grades.

Administering the final test to the chosen population: The examiner administered the test during the first two weeks of March to the intermediate grade children of three schools in the selected school system. A day was required for the testing in each school. This made a total of three days, two consecutive days and the third the following week. The schools used represented a fair sampling of the town's population. At the time of the examination the intelligence quotient of each pupil as judged by a form of the Kuhlmann-Anderson test[1] was noted.

Setting scoring standards: In scoring this subjective test the following standards were established:

Part I: In Part I one point credit was given any question that was considered acceptable. Acceptable responses were judged as to whether they suggested topics for further study either directly related or relevant to the main-idea paragraph.

---

[1] F. Kuhlmann and Rose Anderson, Kuhlmann-Anderson Test - Grade IV, Minneapolis: Educational Test Bureau, 1942

For example: "How many men were on it?" was acceptable for the paragraph about the visit to the battleship. No credit was given for questions which reiterated the ideas of the paragraph. For example: "Was this ship in the United States Navy?" was not accepted because it repeated the idea of the sentence, "This is one of the largest ships in the United States Navy."

Part II: In Part II one point credit was also given for any activity which was either directly related or relevant to the main-idea paragraph. For example: "Have different balls." was accepted as a proposed activity for a sports exhibit. No credit was given when the activities were not relevant or where the meaning was not clear. For example: "Baseball, hockey, football." was not credited as an activity for a sports exhibit as the meaning was not clear.

Since the first pages of both tests were considered more as a guide it was decided not to include these in the scoring.

In the Appendix will be found a list of the accepted responses of both of the parts.

Summary: The purpose in developing this experiment was to develop a measure of the associational reading abilities of the child in the intermediate grades. Associational reading in this study was considered in two phases (1) the ability of the child to find topics for further study by questioning, and (2) the stimulation of ideas for activities from an experiential background. No available tests satisfied this criteria at the established grade level. Therefore a test was con-

structed which measured the above-mentioned functions. Eight exercises were built with life situations providing the motivating power and around the nuclei of camping, sports, adventure, brave deeds, stones, airplanes, automobiles, and ships.

The test in two parts was orgainized as follows:-

Part I - Topics for further study

1. Pupil data sheet and introductory exercise
2. An automobile accident report
3. A visit to a battleship
4. A letter to Byrd

Part II - Suggested activities

1. A rock collection
2. A sports exhibit
3. A camping trip
4. An assembly program

Before the final test was given a preliminary test was administered to fix the approximate amount of time consumed in taking the test and also the time which should elapse between Parts I and II. It was found that each part required approximately half an hour, and that at least three-quarters of an hour should elapse between each part.

The final test was administered to 160 pupils in the intermediate grades of an average community. Of this total, 155 pupils were finally used.

Scoring standards of the test were devised so that one point credit was given to questions and activities directly re-

lated or relevant to the main-idea paragraph, but not stated in it.

# CHAPTER IV

# ANALYSIS OF DATA

# CHAPTER IV

## ANALYSIS OF DATA

The data were analyzed to determine:

1. Comparison by grade level
2. The relationship of the intelligence quotient to the test results
3. Sex differences
4. The relationship between the two parts of the test.

Comparison of scores by grade level: The total scores of both parts of the test were examined first.

TABLE I

DISTRIBUTION OF THE TOTAL SCORES OF 155 INTERMEDIATE GRADE PUPILS

| Total Scores | GRADES 4 | 5 | 6 | Total |
|---|---|---|---|---|
| 42 - 44 | | | 3 | 3 |
| 39 - 41 | | | 2 | 2 |
| 36 - 38 | | 1 | 5 | 6 |
| 33 - 35 | 1 | 3 | 6 | 10 |
| 30 - 32 | 3 | 4 | 7 | 14 |
| 27 - 29 | 2 | 5 | 3 | 10 |
| 24 - 26 | 4 | 7 | 4 | 15 |
| 21 - 23 | 8 | 2 | 12 | 22 |
| 18 - 20 | 3 | 4 | 3 | 10 |
| 15 - 17 | 6 | 11 | 2 | 19 |
| 12 - 14 | 10 | 9 | | 19 |
| 9 - 11 | 3 | 2 | 4 | 9 |
| 6 - 8 | 6 | 1 | 1 | 8 |
| 3 - 5 | 4 | 1 | | 5 |
| 0 - 2 | 2 | 1 | | 3 |
| Number | 52 | 51 | 52 | 155 |
| Mean | 16 | 21.24 | 26.91 | |
| S.D. | 8.37 | 7.89 | 9 | |

Table I shows the range of total scores among 52 fourth graders to be from 0 to 35 with a mean score of 16 and a stand-

ard deviation of 8.37. The range of total scores of 51 fifth graders to be from 0 to 38 with a mean score of 21.24 and a standard deviation of 7.89. The range of total scores of the 52 sixth graders to be from 6 to 44 with a mean score of 26.91 and a standard deviation of 9.

In order to judge the statistical significance of differences in this thesis, the criteria established by Mills[1] shall be used.

> The value of T (the difference between the hypothetical value and the observed mean, in units of a standard error of the mean) corresponding to a probability of 1/100 is 2.576. One hundredth part of the area under a normal curve lies at a distance from the mean, on the axis, of 2.576 standard deviations or more. Accordingly, tests of significance may be applied with direct reference to T, interpreted as a normal deviate (i.e., as a deviation from the mean of a normal distribution expressed in units of standard deviation). A value of T of 2.576 or more indicates a significant difference, while a value of less than 2.576 indicates that the results are not inconsistent with the hypothesis in question.

TABLE II

COMPARISON OF TOTAL SCORES OF GRADES 4 and 5

| Grade | No. | Mean | S.D. | S.Em. | Diff. | S.E. Diff. | Critical Ratio |
|---|---|---|---|---|---|---|---|
| 4 | 52 | 16 | 8.37 | 1.17 | 5.24 | 1.51 | 3.47 |
| 5 | 51 | 21.24 | 7.89 | 1.12 | | | |

[1] Frederick C. Mills, Statistical Methods (Revised) New York: Henry Holt and Company, 1938, p. 471

TABLE III

COMPARISON OF TOTAL SCORES OF GRADES 5 AND 6

| Grade | No. | Mean | S.D. | S.Em. | Diff. | S.E. Diff. | Critical Ratio |
|---|---|---|---|---|---|---|---|
| 5 | 51 | 21.24 | 7.89 | 1.12 | 5.67 | 1.55 | 3.66 |
| 6 | 52 | 26.91 | 9. | 1.27 | | | |

Tables II and III show the differences between the means of grades 4, 5 and 6. Table II indicates the difference between the means of grades 4 and 5 to be 5.24 with a standard error of the difference of 1.51 giving a critical ratio of 3.47. This difference is statistically significant. Table III shows the difference between the means of grades 5 and 6 to be 5.67 with a standard error of the difference of 1.55 giving a critical ratio of 3.66. This difference is also statistically significant.

The scores on Parts I and II of the test were examined next.

TABLE IV

DISTRIBUTION OF PART I SCORES OF 155 INTERMEDIATE GRADE PUPILS

| Test Scores | Grades 4 | 5 | 6 | Total |
|---|---|---|---|---|
| 28 - 29 | | | 6 | 6 |
| 26 - 27 | 1 | 4 | 6 | 10 |
| 24 - 25 | 1 | 3 | 4 | 8 |
| 22 - 23 | 3 | 4 | 6 | 13 |
| 20 - 21 | 2 | 6 | 7 | 15 |
| 18 - 19 | 3 | 3 | 2 | 8 |
| 16 - 17 | 4 | 2 | 5 | 11 |
| 14 - 15 | 4 | 4 | 7 | 15 |
| 12 - 13 | 5 | 8 | 3 | 16 |
| 10 - 11 | 9 | 5 | 1 | 15 |
| 8 - 9 | 4 | 6 | 1 | 11 |
| 6 - 7 | 2 | 4 | 2 | 8 |
| 4 - 5 | 7 | 1 | 1 | 9 |
| 2 - 3 | 4 | 1 | 1 | 6 |
| 0 - 1 | 3 | 1 | | 4 |
| Number | 52 | 51 | 52 | 155 |
| Mean | 11.26 | 14.7 | 19.6 | |
| S.D. | 6.6 | 6.3 | 6.66 | |

Table IV shows the range of scores on Part I among 52 fourth graders to be from 0 to 27 with a mean score of 11.26 and a standard deviation of 6.6. The scores of 51 fifth graders ranged from 0 to 27 with a mean score of 14.7 and a standard deviation of 6.3. The scores of 52 sixth graders ranged from 0 to 29 with a mean score of 19.6 and a standard deviation of 6.66.

TABLE V

COMPARISON OF PART I SCORES OF GRADES 4 AND 5

| Grade | No. | Mean | S.D. | S.Em. | Diff. | S.E. Diff. | Critical Ratio |
|---|---|---|---|---|---|---|---|
| 4 | 52 | 11.26 | 6.6 | .924 | 3.44 | 1.35 | 2.55 |
| 5 | 51 | 14.7 | 6.3 | .89 | | | |

TABLE VI

COMPARISON OF PART I SCORES OF GRADES 5 AND 6

| Grade | No. | Mean | S.D. | S.Em. | Diff. | S.E. Diff. | Critical Ratio |
|---|---|---|---|---|---|---|---|
| 5 | 51 | 14.7 | 6.3 | .89 | 4.9 | 1.35 | 3.63 |
| 6 | 52 | 19.6 | 6.7 | .938 | | | |

Tables V and VI indicate the differences between the means of Part I scores in grades 4, 5, and 6. Table V shows the difference between the means of grades 4 and 5 to be 3.44 with a standard error of the difference of 1.35 yielding a critical ratio of 2.55. Using 2.576 as a criteria this result is considered close enough to be statistically significant. Table VI shows the difference between the means of grades 5 and 6 to be 4.9 with a standard error of the difference of 1.35 giving a critical ratio of 3.63. This difference is statistically significant.

TABLE VII

DISTRIBUTION OF PART II SCORES OF 155 INTERMEDIATE GRADE PUPILS

| | Grades | | | |
|---|---|---|---|---|
| Test Scores | 4 | 5 | 6 | Total |
| 18 - 19 | | | 1 | 1 |
| 16 - 17 | | | 1 | 1 |
| 14 - 15 | | | 2 | 2 |
| 12 - 13 | | 3 | 8 | 11 |
| 10 - 11 | 4 | 2 | 5 | 11 |
| 8 - 9 | 7 | 7 | 8 | 22 |
| 6 - 7 | 7 | 11 | 5 | 23 |
| 4 - 5 | 12 | 15 | 14 | 41 |
| 2 - 3 | 14 | 8 | 5 | 27 |
| 0 - 1 | 8 | 5 | 3 | 16 |
| Number | 52 | 51 | 52 | 155 |
| Mean | 4.6 | 5.5 | 7.6 | |
| S.D. | 2.9 | 2.6 | 3.8 | |

Table VII indicates the distribution of the test scores on Part II of the test. It is noted that the range of scores for 52 fourth graders is from 0 to 11 with a mean of 4.6 and a standard deviation of 2.9. The range of 51 fifth graders is from 0 to 13 with a mean of 5.5 and a standard deviation of 2.6. The 52 sixth graders obtained scores ranging from 0 to 19 with a mean of 7.6 and a standard deviation of 3.8. From this data it appears that this section of the test is too difficult since the means for all grades were very low.

TABLE VIII

COMPARISON OF SCORES ON PART II OF GRADES 4 AND 5

| Grade | No. | Mean | S.D. | S.Em. | Diff. | S.E. Diff. | Critical Ratio |
|---|---|---|---|---|---|---|---|
| 4 | 52 | 4.6 | 2.9 | .406 | .9 | .88 | 1.02 |
| 5 | 51 | 5.5 | 2.6 | .368 | | | |

TABLE IX

COMPARISON OF SCORES ON PART II OF GRADES 5 AND 6

| Grade | No. | Mean | S.D. | S.Em. | Diff. | S.E. Diff. | Critical Ratio |
|---|---|---|---|---|---|---|---|
| 5 | 51 | 5.5 | 2.6 | .368 | 1.9 | .3 | 6.3 |
| 6 | 52 | 7.6 | 3.8 | .53 | | | |

Tables VIII and IX show the differences between the mean scores of grades 4, 5, and 6 in Part II of the test. Table VIII shows the difference between the means of grades 4 and 5 to be .9 with a standard error of the difference of .88 giving

a critical ratio of 1.02. This is not a statistically significant difference. Table IX indicates the difference between the means of grades 5 and 6 to be 1.9 with a standard error of the difference of .3 giving a critical ratio of 6.3. This difference, though small, is of high statistical significance.

The relationship of the Intelligence Quotient to the test.

TABLE X

DISTRIBUTION OF INTELLIGENCE QUOTIENTS FOR 155 INTERMEDIATE GRADE PUPILS

| Intelligence Quotient | Grades 4 | 5 | 6 | Total |
|---|---|---|---|---|
| 130 - 134 | | 1 | | 1 |
| 125 - 129 | | 1 | | 1 |
| 120 - 124 | 3 | 1 | | 4 |
| 115 - 119 | 1 | 5 | 2 | 8 |
| 110 - 114 | 3 | 2 | 2 | 7 |
| 105 - 109 | 7 | 8 | 8 | 23 |
| 100 - 104 | 10 | 7 | 12 | 29 |
| 95 - 99 | 10 | 7 | 10 | 27 |
| 90 - 94 | 4 | 7 | 7 | 18 |
| 85 - 89 | 8 | 6 | 8 | 22 |
| 80 - 84 | 3 | 2 | 2 | 7 |
| 75 - 79 | 2 | 2 | 1 | 5 |
| 70 - 74 | 1 | 2 | | 3 |
| Number | 52 | 51 | 52 | 155 |
| Mean | 97.95 | 98.3 | 98.45 | |
| S.D. | 11.5 | 12.8 | 8.5 | |

In considering the Intelligence Quotient of the fourth, fifth and sixth grades of the population we note that the range of scores of grade 4 is from 70 to 124 with a mean of 97.95 and a standard deviation of 11.5 which indicates that 68 percent of the population in this grade have an I.Q. between 109.45 and 86.45. The range of score in grade 5 is from 70 to 134 with a mean of 98.3 and a standard deviation of 12.8 which indicates that 68 percent of the population have I.Q.'s

between 111.1 and 85.5. The range of scores of grade 6 is from 75 to 119 with a mean of 98.45 and a standard deviation of 8.5 which indicates that 68 percent of the population have I.Q.'s between 116.95 and 89.95. The coefficient of correlation between the total test scores and the I.Q. was worked by the Product-Moment method and was found to be $.36 \pm .07$ which can not be termed statistically significant and indicates the intelligence has very little bearing on the scores in this test.

Sex differences: First it was important to see if there was a difference in the intelligence of the groups of boys and girls. This is shown in Tables XI and XII.

TABLE XI

DISTRIBUTION OF INTELLIGENCE QUOTIENTS OF 87 BOYS AND 67 GIRLS

| Intelligence Quotients | Boys | Girls |
|---|---|---|
| 130 - 134 | | 1 |
| 125 - 129 | 1 | 0 |
| 120 - 124 | 3 | 1 |
| 115 - 119 | 3 | 5 |
| 110 - 114 | 2 | 5 |
| 105 - 109 | 10 | 12 |
| 100 - 104 | 16 | 14 |
| 95 - 99 | 18 | 9 |
| 90 - 94 | 10 | 8 |
| 85 - 89 | 15 | 7 |
| 80 - 84 | 5 | 2 |
| 75 - 79 | 2 | 3 |
| 70 - 74 | 2 | 1 |
| Number | 87 | 68 |
| Mean | 97.1 | 99.3 |
| S.D. | 11.1 | 10.3 |

Table XI indicates that the range of intelligence quotients for the 87 boys is from 70 to 129 with a mean of 97.1

and a standard deviation of 11.1 which means that the scores of 68 percent of the cases are between 86 and 108.2. The intelligence quotients for 68 girls range from 70 to 134 with a mean of 99.3 and a standard deviation of 10.3 which indicates that 68 percent of the cases have I.Q.'s between 89 and 109.6 or slightly higher than the boys.

TABLE XII

DIFFERENCE IN I.Q.'S OF 87 BOYS AND 68 GIRLS

| Sex | No. | Mean | S.D. | S.Em. | Diff. | S.E. Diff. | Critical Ratio |
|---|---|---|---|---|---|---|---|
| Boys | 87 | 97.1 | 11.1 | 1.2 | 2.2 | 1.57 | 1.4 |
| Girls | 68 | 99.3 | 10.3 | 1.25 | | | |

Table XII shows the difference between the mean I.Q.'s of the boys and girls is 2.2 with a standard error of the difference of 1.57 giving a critical ratio of 1.4. This difference is not statistically significant. Therefore, we may say that the intelligence quotients of the boys and girls do not differ enough to be considered a variable.

Next we considered the total scores and the influence of sex on these.

TABLE XIII

DISTRIBUTION OF TOTAL SCORES OF 87 BOYS AND 68 GIRLS

| Total Scores | Boys Grades 4 | 5 | 6 | Total | Girls Grades 4 | 5 | 6 | Total |
|---|---|---|---|---|---|---|---|---|
| 42 - 44 | | | 3 | 3 | | | | |
| 39 - 41 | | | 2 | 2 | | | | |
| 36 - 38 | | 1 | 3 | 4 | | | 2 | 2 |
| 33 - 35 | 1 | | 4 | 5 | | 3 | 2 | 5 |
| 30 - 32 | 2 | 2 | 2 | 6 | 1 | 2 | 5 | 8 |
| 27 - 29 | | 4 | 3 | 7 | 2 | 1 | | 3 |
| 24 - 26 | 1 | 4 | 2 | 7 | 3 | 2 | 2 | 7 |
| 21 - 23 | 5 | 2 | 10 | 17 | 3 | | 2 | 5 |
| 18 - 20 | 1 | 2 | 1 | 4 | 2 | 2 | 2 | 6 |
| 15 - 17 | 4 | 5 | | 9 | 2 | 6 | 2 | 10 |
| 12 - 14 | 4 | 4 | | 8 | 6 | 5 | | 11 |
| 9 - 11 | | 1 | 3 | 4 | 3 | 1 | 1 | 5 |
| 6 - 8 | 5 | | 1 | 6 | 1 | 1 | | 2 |
| 3 - 5 | 1 | 1 | | 2 | 2 | | | 2 |
| 0 - 2 | 2 | 1 | | 3 | 1 | 1 | | 2 |
| Number | 26 | 27 | 34 | 87 | 26 | 24 | 18 | 68 |
| | | Mean 21.59 | | | | Mean 19.9 | | |
| | | S.D. 9.99 | | | | S.D. 9.15 | | |

Table XIII indicates that the range of scores for 87 boys is from 0 to 44 with a mean of 21.59 and a standard deviation of 9.99. The scores of the 68 girls ranged from 0 to 38 with a mean of 19.9 and a standard deviation of 9.15. It will be noted that there are 16 more boys than girls in the sixth-grade group where the scores are higher. This may account in part for the higher mean of the boys.

TABLE XIV

SEX DIFFERENCES OF TOTAL RESPONSES

| Sex | No. | Mean | S.D. | S.Em. | Diff. | S.E. Diff. | Critical Ratio |
|---|---|---|---|---|---|---|---|
| Boys | 87 | 21.59 | 9.99 | 1.1 | 1.69 | 1.6 | 1.06 |
| Girls | 68 | 19.9 | 9.15 | 1.1 | | | |

Table XIV shows the difference between the means of the boys and girls to be 1.69 with a standard error of the difference of 1.6 giving a critical ratio of 1.06 which indicates that this difference is not statistically significant.

The sex differences on Part I of the test were also found as noted in Tables XV and XVi.

TABLE XV

DISTRIBUTION OF PART I SCORES OF 87 BOYS AND 68 GIRLS

| | Boys Grades | | | | Girls Grades | | | |
|---|---|---|---|---|---|---|---|---|
| Part I scores | 4 | 5 | 6 | Total | 4 | 5 | 6 | Total |
| 28 - 29 | | | 5 | 5 | | | 1 | 1 |
| 26 - 27 | 1 | 1 | 5 | 7 | | 2 | 1 | 3 |
| 24 - 25 | 1 | 1 | 1 | 3 | | 2 | 3 | 5 |
| 22 - 23 | 1 | 3 | 5 | 9 | 2 | 1 | 1 | 4 |
| 20 - 21 | | 3 | 3 | 6 | 2 | 3 | 4 | 9 |
| 18 - 19 | 2 | 3 | 2 | 7 | 1 | | | 1 |
| 16 - 17 | 3 | 2 | 3 | 8 | 1 | | 2 | 3 |
| 14 - 15 | 1 | 2 | 4 | 7 | 3 | 2 | 3 | 8 |
| 12 - 13 | 3 | 2 | 1 | 6 | 2 | 6 | 2 | 10 |
| 10 - 11 | 4 | 3 | 1 | 8 | 5 | 2 | | 7 |
| 8 - 9 | 2 | 5 | 1 | 8 | 2 | 1 | | 3 |
| 6 - 7 | 1 | 1 | 1 | 3 | 1 | 3 | 1 | 5 |
| 4 - 5 | 4 | 1 | 1 | 6 | 3 | | | 3 |
| 2 - 3 | 1 | | 1 | 2 | 3 | 1 | | 4 |
| 0 - 1 | 2 | | | 2 | 1 | 1 | | 2 |
| Number | 26 | 27 | 34 | 87 | 26 | 24 | 18 | 68 |
| | Mean 14.3 | | | | Mean 15.74 | | | |
| | S.D. 6.66 | | | | S.D. 7.2 | | | |

Table XV shows the total range of scores for the 87 boys is from 0 to 29 with a mean of 15.74 and a standard deviation of 7.2 indicating that 68 percent of the scores are between 8.54 and 22.94. The total range of scores for the 68 girls is from 0 to 29 with a mean of 14.3 and a standard deviation of 6.66 indicating that 68 percent of the cases are found between 7.64 to 20.96 or slightly lower than that of the boys.

TABLE XVI

SEX DIFFERENCES OF PART I

| Sex | No. | Mean | S.D. | S.Em. | Diff. | S.E. Diff. | Critical Ratio |
|---|---|---|---|---|---|---|---|
| Boys | 87 | 15.74 | 7.2 | .813 | 1.44 | 1.16 | 1.2 |
| Girls | 68 | 14.3 | 6.66 | .776 | | | |

Table XVI indicates the difference between the means of the girls and boys on the Part I scores to be 1.44 with a standard error of the difference of 1.16 giving a critical ratio of 1.2. This difference then is not statistically significant.

Sex differences of Part II scores:

TABLE XVII

DISTRIBUTION OF PART II SCORES OF 87 BOYS AND 68 GIRLS

| | Boys Grades | | | | Girls Grades | | | |
|---|---|---|---|---|---|---|---|---|
| Part II scores | 4 | 5 | 6 | Total | 4 | 5 | 6 | Total |
| 18 - 19 | | | 1 | 1 | | | | |
| 16 - 17 | | | 1 | 1 | | | | |
| 14 - 15 | | | 2 | 2 | | | | |
| 12 - 13 | | 2 | 5 | 7 | | 1 | 3 | 4 |
| 10 - 11 | 2 | 1 | 3 | 6 | 2 | 1 | 2 | 5 |
| 8 - 9 | 3 | 6 | 4 | 13 | 4 | 1 | 4 | 9 |
| 6 - 7 | 1 | 6 | 5 | 12 | 6 | 5 | | 11 |
| 4 - 5 | 5 | 7 | 7 | 19 | 7 | 8 | 7 | 22 |
| 2 - 3 | 10 | 4 | 3 | 17 | 4 | 4 | 2 | 10 |
| 0 - 1 | 5 | 1 | 3 | 9 | 3 | 4 | | 7 |
| Number | 26 | 27 | 34 | 87 | 26 | 24 | 18 | 68 |
| | | Mean | 6.16 | | | Mean | 5.52 | |
| | | S.D. | 4.06 | | | S.D. | 3.16 | |

Table XVII shows the total range of scores for 87 boys to be from 0 to 19 with a mean of 6.16 and a standard deviation of 4.06 which indicates that 68 percent of the cases have scores

between 2.10 and 10.22. The 68 girls have a range of scores between 0 and 13 with a mean of 5.52 and a standard deviation of 3.16 which indicates that 68 percent of the scores are found between 2.36 and 8.68 or slightly lower than that of the boys. This difference might be explained by the greater number of boys' scores in the sixth grade where the scores tend to be higher.

TABLE XVIII

SEX DIFFERENCES IN PART II

| Sex | No. | Mean | S.D. | S.Em. | Diff. | S.E. Diff. | Critical Ratio |
|---|---|---|---|---|---|---|---|
| Boys | 87 | 6.16 | 4.06 | .438 | .63 | .189 | 3.3 |
| Girls | 68 | 5.52 | 3.13 | .217 | | | |

Table XVIII shows the difference in the means of the girls' and boys' scores to be .63 with a standard error of the difference of .189 giving a critical ratio of 3.3. Although the difference is small it is statistically significant.

The relationship between the two parts: In order to ascertain the relationship of the two parts of the test a coefficient of correlation was worked by the Product-Moment Method and found to be $.45 \pm .06$ which indicates that although there is a relationship between the two sections of the test it is not high enough to be considered statistically significant as a prognosis.

# CHAPTER V

# SUMMARY AND CONCLUSIONS

# CHAPTER V

## SUMMARY AND CONCLUSIONS

The purpose of the study was to develop an intermediate grade test to measure the number of pertinent associations made while reading. Through this test it was hoped to ascertain:

1. Whether there is a difference in this ability between the grades
2. The affect of intelligence on the score obtained
3. Sex differences

A two part subjective test was built containing four well-motivated paragraphs in each part. Part I tested the ability to find topics for further investigation and Part II tested the ability to find activities that might be carried out.

The children's written answers were analyzed and a scoring standard was established. The acceptable answers appear in the Appendix.

The test was given in two sittings to 155 children in three fourth, fifth, and sixth grades of an average town school system representing a variety of social, economic and intellectual backgrounds.

## CONCLUSIONS

1. There is a statistically significant difference in the associational reading ability between grades 4, 5 and 6.
2. There is a statistically significant difference in the ability to find topics for further study between grades 4, 5, and 6.
3. In this test there is no statistically significant dif-

ference between the ability of the fourth and fifth grade children to find activities in relation to reading.

4. There is a very significant difference between the ability of the fifth and sixth grade children to find activities in relation to reading.

5. Children with high mental ability do not necessarily have high associational reading ability.

6. There is no significant sex difference in the total associational process considered, nor in the ability to find topics for further study.

7. The boys are more adept at finding activities suggested than are the girls.

8. Statistical treatment of the test indicated that the two elements used had only a slight correlation.

Weakness of the study: Part II was too difficult as shown by the consistently low mean scores obtained by all grades. This section of the test might be used with more explicit directions with an improvement in scores.

## RECOMMENDATIONS FOR FURTHER RESEARCH

1. A Study could be done between a test for critical reading and this associational reading ability test to discover the relationship between the two tests.

2. A test could be built for finding activities to ascertain whether boys are significantly higher in this skill than girls.

3. Control and experimental groups could be set up for teaching the abilities of topic and activity finding in order to determine the effectiveness of teaching in this field.

4. There might be a more objective type test of these abilities developed.

5. Can this ability be dropped to the primary level?

6. How does a development of this skill affect the reading rate?

7. Is there a transfer of this ability to composition and oral expression?

8. Is this ability related to the power of organization?

9. A study to check the number of experiences the child has had before the test is given would be revealing.

10. The relation of this test to a free association test would be interesting.

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# APPENDIX

I. DIRECTIONS FOR ADMINISTERING TEST

II. THE TEST PARTS I AND II

III. ACCEPTED RESPONSES

IV. SCORES OF INDIVIDUAL PUPILS

## EXAMINER'S DIRECTIONS

### PART I

1. Part I of the test is given to each child. Pencils should be in the ledge.

2. "Fill in the heading. Put your last name first."

3. Say, "This is a test to see how well you can think while you are reading. The first part of the test is on your desk. We want to see how many good questions you can ask about a paragraph. We will do part of the first exercise together."

4. Read orally with the children the first paragraph on the first page, "A friend of yours has flown across the United States. What questions would you ask if he only told you the following about the trip?"

5. Say, "Now you read the paragraph to yourself. Look up when you have finished reading the paragraph."

6. When all have finished say, "Take your pencils. We will put a check next to the questions that would be good to ask."

7. Now read, "Number one. How long did the trip take?" Make sure that all children realize that it would tell more about the trip. Have each child put a check next to the number 1.

8. "Number two. What kind of airplane was it?" Make sure that all children realize that this also would be a good question. Put a check in the space next to number 2.

9. "Number three. What year were airplanes invented?" Be sure that all children know that this would not help you to know more about your friend's trip, although it is a good question. No mark is put in the space next to number 3.

10. Say, "We did not mark all the questions because one was not any help to us in finding out more about our friend's trip. You be sure that you mark only the ones that will help you find out something about the trip. When you have finished the first page put your pencils down. Begin!"

11. When almost all have finished say, "Pencils down. If you have not finished you may go back later. On the next pages you will be asked to write your own questions about the paragraphs. Make sure the questions will help you find out more about the paragraph on the page. Work as fast as you can. Spell the words the best you can. The way you spell a word does not count on your grade. Turn the page and work until you have finished the whole test. Begin."

12. Collect the papers as the children finish and allow them to take out some other work that is quiet.

PART II

1. This part must be administered at least three-quarters of an hour after the first part. Part II is given to each child. Pencils should be in the ledge.

2. Say, "Write your name on the top line, your last name first. This is the second part of the test that you took this morning. We want to see how many different things the paragraph suggests for you to do. We will do part of the first exercise together."

3. Read orally with the pupils, "You are going to make a rock collection. As you read the paragraph below think of all the things you could do to make your collection the best one around."

4. Say, "Now you read the paragraph to yourself. Look up when you have finished reading the paragraph."

5. When all have finished say, "Take your pencils. We will put a check next to the things that would help you make a good collection."

6. Read, "Number one. Take a trip to a natural history museum." Make sure that all the children realize that this would be a good activity. All make a check next to number 1.

7. Read, "Number two. Go to the zoo." Be sure that all children realize that this is not a good activity. No check is made next to number 2.

8. Say, "We did not mark both the numbers so you be sure to mark only the ones that will help you with your collection. Put down your pencils when you finish page one. Begin!"

9. When all have finished say, "On the next pages you will be asked to write your own ideas of places to go, things to do, and people to talk to; to find out more about some subject. Work as fast as you can. Spell the best you can. Spelling will not be counted against you. Turn the page and work until you have finished all of the pages. Begin!"

10. Collect the papers as the children finish and allow them to work at some quiet job.

PART I

NAME_____ DATE_____
Last First

SCHOOL_____ GRADE_____ BOY OR GIRL_____

A friend of yours has flown across the United States. What questions would you ask him if he only told you the following about the trip?

The plane took off on a clear cold day from the airport in New York. We ran into a few storms on the way over the mountains, but luckily nothing happened. It seemed that before we knew it we had landed in California and we were at the end of our trip.

Put a check ✓ in the ( ) next to the questions that would be good to ask.

(✓) 1. How long did the trip take?

( ) 2. What kind of a plane was it?

( ) 3. What year were airplanes invented?

( ) 4. How many stops did you make?

( ) 5. Who took the first plane ride?

( ) 6. What did you see from the plane?

( ) 7. When did California become a state?

( ) 8. What happened when the plane was in the storms?

( ) 9. Who else was on the plane?

( ) 10. Who served you your dinner?

( ) 11. Did you eat on the plane?

On the next page you will be asked to write your own questions about the paragraph.

You are a policeman. There has been an automobile crash. You have to tell about it in court. You come after the crash has happened. Someone tells you this story. What other questions must you ask to know all about it?

There was a loud crash as the two cars met in a head-on collision. Both were traveling very fast over the slippery roads. It is a wonder that anyone was able to live after such a wreck.

Write your questions below.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

You have been invited on board a battleship. The paragraph below is all that was sent to you from the ship. As you read think of all the things you would like to know about the ship:

This is one of the largest battleships in the United States Navy. She has sailed the seven seas. In World War II she was in many of the major battles of the Pacific. On her decks were signed the surrender terms of the Japanese.

Write all the questions that would be important in a visit to the ship.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

You are going to write a letter to a man who is on his way to the South Pole. The following paragraph is all you know about the trip. As you read the paragraph think of all the questions you could ask in your letter.

Rear Admiral Richard E. Byrd is on his way to the last frontier of the world, the South Pole. He is in charge of a huge expedition that will try to explore the icy land. Many new inventions will also be tried in this below-freezing land.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

PART II

NAME_____

You are going to make a rock collection. As you read the paragraph below think of all the things you could do to make your collection the best one around.

There are many kinds of rocks that you can find near your home. The men who study stones have found out many things about our world. If you look carefully at the rocks around you you will know more about your home.

Put a check in the ( ) next to the things that would help you make a good collection.

( ) 1. Take a trip to the natural history museum.

( ) 2. Go to the zoo.

( ) 3. Write for some free books about rocks.

( ) 4. Talk to the man who has a collection.

( ) 5. Read all about the beginning of the world.

( ) 6. Make a map of the places where the stones were found.

( ) 7. Make a stone fence.

( ) 8. Put the names on all the stones.

( ) 9. Talk to the man who sells sand and gravel.

( ) 10. Invite people to see your collection and make suggestions.

On the next page you will be asked to write in your own ideas about the paragraphs.

You are planning an exhibit of sports and games. As you read the paragraph below think of all the things that you can do to make your exhibit a prize winner.

The history of sports is as old as the world itself. The cave men played a form of catch. The Indians were playing with balls when Columbus landed here. Today many of our sports that we play for fun can be traced back to some olden times.

Write below all the things that you would have in your exhibit. Try to make them as different as you can.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

You are in charge of a camping trip that is being planned. The paragraph below tells you about the trip. What will you have to do to find out more about it and get ready?

The scouts are going camping in the woods for a week. Each boy will carry his own kit. The camping place is a two day hike over rough country. There are many sports to enjoy at the camp.

Write what you will have to do to get ready.

You are planning an assembly program. The paragraph below tells something about it. What could you do to make it very interesting?

Christopher Columbus is know as the discoverer of America. He sailed from Spain to this section of the world in 1492. The story of his trip in a tiny boat is very exciting.

Write what you would put in your assembly program in the space below.

## QUESTIONS - ACCIDENT REPORT

| | GRADE 4 | GRADE 5 | GRADE 6 |
|---|---|---|---|
| **WHO** | | | |
| was driving | 6 | 7 | 10 |
| was in the car | 7 | 17 | 21 |
| was at fault | 10 | 7 | 14 |
| was hurt | 7 | 10 | 11 |
| saw accident | | 5 | 8 |
| told you about it | | 3 | 2 |
| **WHAT** | | | |
| was the damage | 10 | 11 | 10 |
| kind of a car | 3 | 11 | 21 |
| names and addresses | 6 | 8 | 19 |
| do when saw crash | 1 | 4 | |
| kind of damage | 3 | | 9 |
| was number of car registration | 1 | 6 | 13 |
| happened before crash | | 2 | 8 |
| person looked like | | 1 | 4 |
| **WHERE** | | | |
| do they live | 5 | 4 | 7 |
| did the crash take place | 16 | 18 | 24 |
| are the people now | 1 | 2 | 8 |
| **HOW** | | | |
| did crash happen | 16 | 17 | 19 |
| fast were cars going | 10 | 26 | 33 |
| many hurt or killed | 20 | 21 | 24 |
| many in cars | 11 | 10 | 12 |
| get out of cars | 3 | 3 | 2 |
| far could you hear crash | 1 | 3 | |
| old are you | 1 | 2 | 1 |
| much damage | | 5 | 8 |
| **WHEN** | | | |
| did it happen | 12 | 15 | 16 |
| **IS - ARE** | | | |
| something wrong with cars | 1 | 1 | 3 |
| **WHY** | | | |
| didn't they slow down | 8 | 14 | 20 |
| were roads slippery | 6 | 10 | 13 |
| **WERE - WAS** | | | |
| cars on right side of road | 2 | 4 | 11 |
| cars insured | 1 | 1 | 5 |
| you in wreck | 8 | 4 | 3 |
| near traffic light | 1 | | |
| road sanded | 1 | | |

QUESTIONS - ACCIDENT REPORT (Con't.)

| | GRADE 4 | GRADE 5 | GRADE 6 |
|---|---|---|---|
| WERE - WAS | | | |
| they drinking | 1 | 2 | 10 |
| brakes good - checked | | 2 | 8 |
| DID - DO - DOES | | | |
| anybody get hurt - killed | 18 | 9 | 6 |
| ambulance come | 1 | 2 | 5 |
| know how to drive | 8 | 1 | 9 |
| see crash | 17 | 2 | 7 |
| know anyone in crash | 3 | 2 | 9 |
| see car coming | 1 | 1 | 2 |
| you help | 1 | 1 | |

## QUESTIONS ON PARAGRAPH ABOUT BATTLESHIP

| | GRADE 4 | GRADE 5 | GRADE 6 |
|---|---|---|---|
| WHAT | | | |
| is the name | 12 | 16 | 28 |
| kind of a ship | 3 | 2 | 3 |
| look like inside | 6 | 5 | 4 |
| color | 3 | 4 | 4 |
| captain's name | 8 | 8 | 15 |
| Jap's dressed in | 2 | | |
| battles | | 4 | 6 |
| time be there | | 1 | |
| did it cost | | 1 | 1 |
| will be done with her | | 4 | 5 |
| Jap writing look like | | 1 | |
| men do for recreation | | 1 | 2 |
| is used for power | | 1 | 1 |
| is ship made of | | 1 | 1 |
| kind of food | | | 2 |
| flags has it | | | 1 |
| are the mascots | | | 1 |
| WHY | | | |
| terms signed on her | 1 | | 2 |
| call ships she | 1 | | |
| DO - DID | | | |
| any other nation own it | | 1 | |
| know anyone on the ship | 1 | | 1 |
| any men get medals | 1 | | |
| WHERE | | | |
| do men sleep | 2 | 2 | 3 |
| do men eat | 1 | | 3 |
| did she fight | 1 | 1 | |
| is the ship docked | 1 | 4 | 4 |
| is it going | 4 | | 1 |
| was she built | | 3 | 3 |
| have you come from | | 1 | 1 |
| was she most of the time | | | 1 |
| WHO | | | |
| did they fight | 1 | | |
| built the ship | 3 | | |
| is the pilot | 1 | | 1 |
| will be there | | 2 | 3 |
| signed the surrender terms | | 1 | 8 |
| named the ship | | 1 | |
| drew up the terms | | | 2 |

QUESTIONS ON PARAGRAPH ABOUT BATTLESHIP
(Continued)

| | GRADE 4 | GRADE 5 | GRADE 6 |
|---|---|---|---|
| ARE | | | |
| there any radios | | 1 | |
| any radar | | 1 | 1 |
| any look-out tower | | | 2 |
| lights big | | | 2 |
| WHEN | | | |
| did they fight | 1 | | 2 |
| was it built | 2 | 6 | 5 |
| was surrender signed | | 2 | 4 |
| will we come | | 1 | 1 |
| WAS - IS | | | |
| it the same crew | | | 2 |
| it damaged or sunk | 15 | 24 | 21 |
| in World War I | 8 | 5 | 3 |
| largest in the Navy | 1 | 3 | 2 |
| any animals | 1 | 1 | 1 |
| important | | 1 | |
| strongly built | | 1 | |
| a member of a fleet | | 4 | 3 |
| HOW | | | |
| many battles | 8 | 11 | 21 |
| many Japs signed terms | 7 | 4 | 2 |
| many engines | | 2 | 1 |
| much can it carry | 2 | | 1 |
| large is anchor and chain | | | 3 |
| old is ship | 5 | 6 | 8 |
| large is ship | 13 | 18 | 26 |
| many guns | 12 | 16 | 14 |
| large are guns | 5 | 1 | 2 |
| many men | 14 | 27 | 25 |
| many ships has Navy | 4 | | 1 |
| long at sea | 1 | 2 | 1 |
| many men hurt or killed | 13 | 11 | 6 |
| many cabins | 1 | 4 | 6 |
| much ship weigh | 5 | 3 | 3 |
| is it run | 1 | | |
| many decks | 1 | 3 | 2 |
| many guards | 1 | | |
| far is Japan | 1 | | |
| many life boats | 1 | 3 | |
| many planes and ships damaged | 8 | 6 | 21 |
| fast does it go | 3 | 3 | 8 |
| is ship made | 1 | | 1 |
| many trips made | 1 | 2 | 3 |
| many planes on it | | 4 | 6 |

## QUESTIONS ON PARAGRAPH ABOUT BYRD

| | GRADE 4 | GRADE 5 | GRADE 6 |
|---|---|---|---|
| **WHY** | | | |
| called the last frontier | 0 | 0 | 1 |
| **WHICH** | | | |
| route used to get there | 0 | 4 | 0 |
| **WHERE** | | | |
| will you land | 0 | 0 | 2 |
| start from | 0 | 0 | 1 |
| is ship | 1 | 0 | 0 |
| is he now | 1 | 0 | 0 |
| do you get food | 0 | 1 | 0 |
| **DID - DO - DOES** | | | |
| you discover anything | 0 | 0 | 2 |
| you think there are any minerals | 0 | 2 | 2 |
| find any buried food | 1 | 0 | 0 |
| find people there - Eskimos | 3 | 11 | 5 |
| do any other exploring | 1 | | |
| many things grow there | 1 | | |
| any women go - Nurses, etc. | 1 | 4 | 1 |
| you have to work hard | 2 | 1 | |
| go hunting - catch - | 3 | 3 | 1 |
| you stop on the way | | 2 | |
| inventions work | | 1 | 2 |
| leave anything last time | | 1 | |
| **ARE - IS** | | | |
| there any stores | 1 | | 1 |
| there any animals (polar bears, etc.) | 13 | 17 | 13 |
| it a new state | | 1 | |
| anyone hurt or killed | | 2 | 9 |
| there any glaciers | | 1 | 1 |
| you near the ocean | | 1 | |
| **WHAT** | | | |
| name of the part of the pole going to | 3 | 2 | 10 |
| are the inventions | 6 | 9 | 19 |
| have you seen - done | 1 | 2 | 3 |
| are you looking for - find out | 2 | 4 | 4 |
| is the temperature and weather | 18 | 25 | 33 |
| expect to find | | 2 | 6 |
| name of expedition | | | 3 |
| kind of a plane go on | 1 | | |
| live in | 2 | 5 | 4 |
| sights see | 4 | 3 | 2 |
| kinds of clothes | 2 | 7 | 8 |
| going to do | 1 | 2 | 1 |
| time does it get dark | 2 | 1 | 1 |
| was ship like | 1 | 9 | 3 |

QUESTIONS ON PARAGRAPH ABOUT BYRD
(Continued)

| | GRADE 4 | GRADE 5 | GRADE 6 |
|---|---|---|---|
| WHAT | | | |
| is the place like | | 2 | 6 |
| kind of food | | 3 | 8 |
| kind of vegetation | | 1 | |
| name of flagship | | 1 | |
| equipment used | | 2 | 7 |
| is cost | | 1 | 2 |
| means of communication | | | 1 |
| flag put there | | | 2 |
| WHEN | | | |
| be back | 4 | 5 | 6 |
| going | 3 | 6 | 3 |
| did he get there | | 2 | 6 |
| WHO | | | |
| second in command | 1 | | |
| put him in charge | 1 | | 1 |
| navigator | 1 | | |
| is going | | | 3 |
| HOW | | | |
| much has it been explored | | | 2 |
| did they find this land | | | 1 |
| large is it | | | 2 |
| do heat places | | | 1 |
| going to get mineral's | | | 1 |
| coming back | | 1 | 2 |
| many men going | 7 | 24 | 29 |
| many days to make trip | 6 | 13 | 11 |
| many times been there | 3 | 1 | 8 |
| long going to stay | 2 | 6 | 5 |
| far to South Pole | 1 | 2 | 5 |
| many clothes needed | 8 | 3 | |
| travel to get there | 8 | 9 | 25 |
| travel while there | 2 | 2 | 3 |
| thick is ice and snow | 7 | 4 | 9 |
| much men weigh with clothes | 1 | | |
| many new inventions | 4 | 6 | 10 |
| many dogs | 2 | 2 | 8 |
| old is Byrd | 2 | | 1 |
| tell temperature | 1 | | |
| make houses | 1 | | |
| do they live | 1 | | |
| many animals | 2 | 1 | 1 |
| break ice | 1 | 2 | |
| many iceburgs | 1 | | |
| was trip (storms, etc.) | 1 | 5 | 7 |
| much food | 1 | 3 | 5 |

QUESTIONS ON PARAGRAPH ABOUT BYRD
(Continued)

| | GRADE 4 | GRADE 5 | GRADE 6 |
|---|---|---|---|
| HOW | | | |
| many ships, planes, etc. | | 4 | 9 |
| WILL | | | |
| it be a place to visit | | | 1 |

ACTIVITIES - EXHIBIT

SEE
someone who has run an exhibit
different kinds of races
different kinds of guns
different materials for game
Baseball and bat
Football and helmet
Bathing trunks
Tennis equipment, etc.
Plan of different kinds of games
Playing different games
Wrestling matches
Boxing matches
Ju-jitsu
Tennis
Baseball, etc.
Someone to tell how to play the games
Pictures of winners in sports
Sale of equipment
Tell where you can buy games
Autographs of champions
Gold cups you win for sports
Materials used by champions
Ancient balls and weapons
Books on sports
Pictures of cavemen
Kinds of fish
Indian clothes
Bear skins and stuffed animals
Books on cavemen
Kinds of ammunition
Live animals
Movies about spots
Different kinds of trees
A play about sports
Advertisements

## ACTIVITIES - CAMPING

Gather equipment:-
- Tents
- Clothing
- Food
- First-aid kit
- Flashlight
- Matches
- Watch
- Compass
- Map
- Binoculars
- Paper
- Money
- Guns
- Dry wood
- Netting
- Water
- Tools - dishes
- Bedding

Plan transportation
Talk to Scout Master
Learn first aid
Find out the number going
Find out the kind of country
Check the weather
Get parents' permission
Get boys together
Plan the trails to take
Plan the kinds of sports to play when get there

## ACTIVITIES - PROGRAM

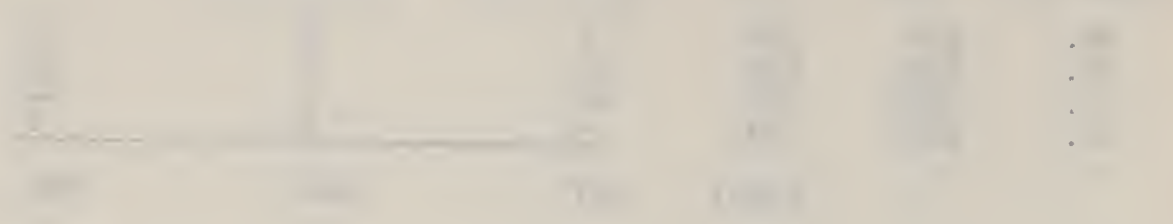
Play about Columbus
Community sing
Singing on the stage
Exhibit of things used in his time
Tell about his doings
Dancing
Jokes
Models of boats used by Columbus
Clothes exhibit
Speaker
Poems

PUPILS' SCORES - GRADE 4

| Pupil No. | Sex | I.Q. | Questions | Activities | Total |
|---|---|---|---|---|---|
| 1. | Boy | 83 | 17 | 9 | 26 |
| 2. | Girl | 78 | 5 | 5 | 10 |
| 3. | Girl | 78 | 1 | 0 | 1 |
| 4. | Boy | 95 | 5 | 2 | 7 |
| 5. | Boy | 102 | 9 | 3 | 12 |
| 6. | Girl | 109 | 15 | 7 | 22 |
| 7. | Boy | 85 | 1 | 2 | 3 |
| 8. | Girl | 80 | 11 | 8 | 19 |
| 9. | Boy | 111 | 11 | 5 | 16 |
| 10. | Girl | 120 | 10 | 11 | 21 |
| 11. | Girl | 106 | 14 | 7 | 21 |
| 12. | Boy | 82 | 18 | 0 | 18 |
| 13. | Girl | 113 | 23 | 6 | 29 |
| 14. | Boy | 92 | 12 | 10 | 22 |
| 15. | Girl | 70 | 23 | 4 | 27 |
| 16. | Girl | 88 | 4 | 1 | 5 |
| 17. | Girl | 108 | 16 | 8 | 24 |
| 18. | Girl | 98 | 2 | 5 | 7 |
| 19. | Girl | 110 | 10 | 4 | 14 |
| 20. | Boy | 86 | 6 | 0 | 6 |
| 21. | Girl | 102 | 6 | 8 | 14 |
| 22. | Boy | 87 | 3 | 3 | 6 |
| 23. | Girl | 92 | 9 | 3 | 12 |
| 24. | Boy | 109 | 4 | 3 | 7 |
| 25. | Boy | 101 | 13 | 3 | 16 |
| 26. | Girl | 104 | 10 | 5 | 15 |
| 27. | Boy | 115 | 17 | 4 | 21 |
| 28. | Girl | 105 | 18 | 5 | 23 |
| 29. | Girl | 106 | 12 | 2 | 14 |
| 30. | Boy | 108 | 19 | 6 | 25 |
| 31. | Boy | 121 | 16 | 5 | 21 |
| 32. | Boy | 121 | 11 | 10 | 21 |
| 33. | Boy | 95 | 11 | 1 | 12 |
| 34. | Boy | 104 | 23 | 8 | 31 |
| 35. | Boy | 100 | 9 | 6 | 15 |
| 36. | Boy | 92 | 12 | 2 | 14 |
| 37. | Boy | 100 | 10 | 4 | 14 |
| 38. | Girl | 86 | 21 | 10 | 31 |
| 39. | Girl | 97 | 4 | 0 | 4 |
| 40. | Girl | 98 | 14 | 3 | 17 |
| 41. | Girl | 101 | 12 | 7 | 19 |
| 42. | Girl | 97 | 21 | 4 | 25 |
| 43. | Boy | 87 | 0 | 0 | 0 |
| 44. | Girl | 89 | 3 | 6 | 9 |
| 45. | Boy | 97 | 14 | 3 | 16 |
| 46. | Girl | 104 | 9 | 5 | 14 |
| 47. | Boy | 95 | 27 | 3 | 30 |
| 48. | Girl | 96 | 3 | 8 | 11 |

PUPILS' SCORES - GRADE 4 (Con't.)

| Pupil No. | Sex | I.Q. | Questions | Activities | Total |
|---|---|---|---|---|---|
| 49. | Boy | 98 | 5 | 3 | 8 |
| 50. | Boy | 102 | 25 | 9 | 34 |
| 51. | Girl | 93 | 10 | 2 | 12 |
| 52. | Boy | 88 | 4 | 1 | 5 |
| | | Total | 567 | 238 | 805 |



PUPILS' SCORES - GRADE 5

| Pupil No. | Sex | I.Q. | Questions | Activities | Total |
|---|---|---|---|---|---|
| 1. | Girl | 91 | 7 | 9 | 16 |
| 2. | Girl | 89 | 13 | 4 | 17 |
| 3. | Boy | 85 | 15 | 2 | 17 |
| 4. | Girl | 88 | 13 | 6 | 19 |
| 5. | Boy | 106 | 23 | 8 | 31 |
| 6. | Boy | 120 | 20 | 6 | 26 |
| 7. | Boy | 94 | 18 | 7 | 25 |
| 8. | Girl | 102 | 20 | 4 | 24 |
| 9. | Boy | 81 | 17 | 8 | 25 |
| 10. | Girl | 132 | 27 | 7 | 34 |
| 11. | Boy | 85 | 7 | 2 | 9 |
| 12. | Girl | 100 | 25 | 10 | 35 |
| 13. | Boy | 102 | 10 | 6 | 16 |
| 14. | Girl | 107 | 11 | 5 | 16 |
| 15. | Boy | 93 | 4 | 1 | 5 |
| 16. | Boy | 99 | 8 | 8 | 16 |
| 17. | Boy | 104 | 13 | 9 | 22 |
| 18. | Girl | 92 | 3 | 3 | 6 |
| 19. | Boy | 129 | 26 | 12 | 38 |
| 20. | Girl | 104 | 13 | 0 | 13 |
| 21. | Boy | 71 | 14 | 4 | 18 |
| 22. | Boy | 93 | 8 | 6 | 14 |
| 23. | Boy | 117 | 20 | 8 | 28 |
| 24. | Boy | 111 | 24 | 4 | 28 |
| 25. | Boy | 99 | 20 | 6 | 26 |
| 26. | Girl | 112 | 9 | 5 | 14 |
| 27. | Boy | 116 | 22 | 4 | 26 |
| 28. | Girl | 107 | 10 | 2 | 12 |
| 29. | Girl | 79 | 0 | 0 | 0 |
| 30. | Girl | 92 | 14 | 1 | 15 |
| 31. | Girl | 99 | 7 | 2 | 9 |
| 32. | Boy | 83 | 9 | 3 | 12 |
| 33. | Girl | 99 | 14 | 1 | 15 |
| 34. | Girl | 91 | 7 | 6 | 13 |
| 35. | Boy | 95 | 8 | 7 | 15 |
| 36. | Boy | 78 | 18 | 9 | 27 |
| 37. | Girl | 118 | 27 | 4 | 31 |
| 38. | Girl | 101 | 12 | 2 | 14 |
| 39. | Boy | 109 | 10 | 10 | 20 |
| 40. | Boy | 105 | 17 | 5 | 22 |
| 41. | Girl | 117 | 24 | 7 | 31 |
| 42. | Boy | 86 | 22 | 5 | 27 |
| 43. | Girl | 105 | 21 | 5 | 26 |
| 44. | Girl | 115 | 13 | 4 | 17 |
| 45. | Boy | 86 | 11 | 3 | 14 |
| 46. | Boy | 98 | 19 | 13 | 32 |
| 47. | Boy | 98 | 13 | 4 | 17 |
| 48. | Girl | 109 | 23 | 6 | 29 |

PUPILS' SCORES - GRADE 5 (Con't.)

| Pupil No. | Sex | I.Q. | Questions | Activities | Total |
|---|---|---|---|---|---|
| 49. | Girl | 100 | 13 | 5 | 18 |
| 50. | Girl | 106 | 21 | 12 | 33 |
| 51. | Boy | 74 | 9 | 4 | 13 |
| | | Total | 752 | 284 | 1036 |

PUPILS' SCORES - GRADE 6

| Pupil No. | Sex | I.Q. | Questions | Activities | Total |
|---|---|---|---|---|---|
| 1. | Boy | 97 | 18 | 5 | 23 |
| 2. | Boy | 88 | 8 | 2 | 10 |
| 3. | Boy | 95 | 21 | 4 | 25 |
| 4. | Girl | 119 | 15 | 10 | 25 |
| 5. | Boy | 85 | 29 | 8 | 37 |
| 6. | Girl | 112 | 24 | 12 | 36 |
| 7. | Girl | 85 | 25 | 5 | 30 |
| 8. | Boy | 92 | 18 | 10 | 28 |
| 9. | Boy | 107 | 22 | 19 | 41 |
| 10. | Girl | 108 | 25 | 5 | 30 |
| 11. | Girl | 83 | 7 | 4 | 11 |
| 12. | Boy | 79 | 10 | 1 | 11 |
| 13. | Boy | 95 | 26 | 8 | 34 |
| 14. | Boy | 96 | 27 | 17 | 44 |
| 15. | Girl | 92 | 15 | 2 | 17 |
| 16. | Boy | 86 | 3 | 4 | 7 |
| 17. | Boy | 104 | 21 | 1 | 22 |
| 18. | Boy | 98 | 15 | 7 | 22 |
| 19. | Boy | 93 | 15 | 3 | 18 |
| 20. | Boy | 93 | 6 | 15 | 21 |
| 21. | Boy | 97 | 17 | 6 | 23 |
| 22. | Boy | 100 | 29 | 14 | 43 |
| 23. | Boy | 103 | 29 | 13 | 42 |
| 24. | Boy | 105 | 15 | 7 | 22 |
| 25. | Girl | 101 | 13 | 5 | 18 |
| 26. | Girl | 98 | 21 | 10 | 31 |
| 27. | Girl | 113 | 20 | 12 | 32 |
| 28. | Girl | 100 | 27 | 8 | 35 |
| 29. | Girl | 109 | 16 | 4 | 20 |
| 30. | Girl | 95 | 14 | 3 | 17 |
| 31. | Boy | 106 | 27 | 10 | 37 |
| 32. | Boy | 86 | 5 | 4 | 9 |
| 33. | Girl | 93 | 20 | 5 | 25 |
| 34. | Girl | 117 | 28 | 8 | 36 |
| 35. | Boy | 105 | 23 | 3 | 26 |
| 36. | Boy | 87 | 25 | 10 | 35 |
| 37. | Boy | 93 | 15 | 6 | 21 |
| 38. | Boy | 104 | 23 | 8 | 31 |
| 39. | Boy | 89 | 13 | 8 | 21 |
| 40. | Boy | 92 | 17 | 12 | 29 |
| 41. | Boy | 95 | 28 | 5 | 33 |
| 42. | Boy | 81 | 20 | 1 | 21 |
| 43. | Girl | 109 | 21 | 9 | 30 |
| 44. | Boy | 101 | 27 | 13 | 40 |
| 45. | Boy | 104 | 23 | 5 | 28 |
| 46. | Boy | 103 | 26 | 12 | 38 |
| 47. | Girl | 102 | 17 | 4 | 21 |
| 48. | Girl | 102 | 22 | 12 | 34 |

PUPILS' SCORES - GRADE 6 (Con't.)

| Pupil No. | Sex | I.Q. | Questions | Activities | Total |
|---|---|---|---|---|---|
| 49. | Boy | 105 | 22 | 12 | 34 |
| 50. | Girl | 88 | 13 | 8 | 21 |
| 51. | Boy | 99 | 28 | 4 | 32 |
| 52. | Boy | 102 | 16 | 6 | 22 |
| | | Total | 993 | 369 | 1362 |

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